MINNESOTA POLLUTION CONTROL AGENCY
Division of Water Quality

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Memorandum of Waste Disposal
Republic Creosote Co. and
Reilly Tar and Chemical Co.

St. Louis Park, Minn.

There are two companies doing business in the area under consideration. The Reilly Tar and Chemical Co. which distills coal tar to obtain creosote oil. The Republic Creosote Co. impregnates wood products with creosote AND PETROLEUM OIL. The company has been located in the village of St. Louis Park at this same location for over a half of century. There is a surface condenser used in the distillation process, in which the cooling water does not come in contact with the product.. The flow in this waste stream is about 20 gpm is recirculated to a cooling pond of about a 47,000 gallon capacity. The company's tentative plans are for abandoning this pond and using a one pass system with discharge to the storm sewer when it is extended to the area.

In the distillation process a wet fraction of petroleum product is obtained, this material is heated to separate the water. This separated water, estimated by the company to be 300 gallons a month, flows through an oil water separator, a hay filter, then leaves company property. The company desires to discharge this to the sanitary sewer system. Any overflow from the refining process is also discharged to the oil separator system.

The whole method of industrial waste disposal is complicated by surface run-off waters and seepage into the ground waters of the state. The plant site is 78 acres of land in St. Louis Park is drained across company property. After completion of the storm sewer project which will be constructed for this month.

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The company area seems seeped with petroleum products. Although the

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company maintains that there is no drippage from the processed products which are stored on thati their property.

The drainage from company property is from the north to the south end of their land and leaves the property by a culvert crossing under Walker Street at the south end. Also in the area the area the overflow from the oil separator combines with the surface run-off waters.

Laboratory analysis were made of this flow before the culvert and showed the phenolic concentrations on April 14 and 18 respectively, as 150 and 1100 mg/l for 5-day biochemical oxygen demand of at least 10000 mg/l, suspended soli s. and turbidity of 82 and 96 respectively. Lab Analyses in 1972

A bioassy conducted on waters collected at this point on April 18, produced almost immediate fatality to fathead minnows in the undiluted effluent and 25% solution (227 mg/l) and 100% fatality within 24 hours in a 5% solution (55 mg/l). Dilution water was taken from Minnehaha Creek upstream from the drainage of Republic Creosote to the Creek.

The water goes to a marsh and ultimately two small ponds bounded by Walker St., West Lake and Oregon Streets, which are divided by State Highway 7.

A second bioassay was conducted on fathead minnows using water from the pond south of highway 7.

The concentration of phenolic compounds in the pond was 14-19 mg/l in the undiluted sample. Within 24 hours all the fish in the undiluted and 75% solutions had expired (10.5-19.0 mg/l) of phenolic compounds).

At the completion of the laboratory test, fathead minnows were placed in the pond south of highway 7, and in Minnehaha Creek above the drainage influence of the pond and downstream from the pond. Within 24 hours all the fish in the pond had expired, while the fish at both points in the creek did not show significant mortality. During this period the temperature in the pond ranged between 10-14°C and 6.5-7.2 mg/l dissolved oxygen.

In general it can be said that the 96 hour TLm 50 for fathead minnows for the phenolic components of the effluent from Republic Creosote ranges somewhere between 8 and 19 mg/l. (TLm 50 is the generally accepted toxix criterin. It means that concentration of which 50% of the tests organisms survive within the time limits of the test).

Samples of the bottoms sediments in the ditch south of Walker Street, north of highway 7, south of highway 7 where the ditch enters the marshy pond, at the center of the pond revealed heavy accumulations of black, oily creosote lade sediments.. No bottom organisms were found in any of the sediments.

Water from each of the above samples was examined microscopically for plankton and other microscopic organisms. No algae or micro fauna were found, but extensive masses of fungal micellium were found in the sample north of Walker Street.

The toxicity tests conducted on fathead minnows in the fish field and in the laboratory show that the waste water from Republic Creosote is highly toxic to fish life as it leaves the plant property and throughout its drainage course into the pond south of highway 7.

Bottoms samples and microscopic examinations of wastewater revealed that bottom organisms and microscopic fauna and algae cannot survive in any of the series of ditches and ponding areas receiving effluent from Republic Creosote. The fungal micellium in the ditch north of Walker Street is probably metabolizing one or more of the organic components of the wastewater.

The plant site area is saturated with petroleum products. During rains the south part of the property is under water. There is a great deal of concern by the city of St. Louis Park that run-off water may seep into the ground and leach the spilled oil into the ground waters.

In 1932, the city had to abandon one of its wells because of a tanky taste.

The bed rock and surface geology is a series of Ordovician and Cambrian sandstones and dolomites overlain by glacial till. The St. Peter, 100-250 feet deep, the Jordon, 400-500 feet deep and the Hinckley, 1000 feet deep are used by St. Louis Park as a source of municipal drinking water. The till is 50-100 feet thick and consists of clay with small amounts of sand and gravel.

An investigation by Hickok and Associates for St. Louis Park showed that the city wells were contaminated by phenols. The values reported ranged from .023 ppm to a trace. The larger values being found in the shallower aquifers. The report also states that phenols were found in soil borings, outside of the plant site, to depths of 20 feet. The concentrations were in the .02 ppm range.

An analysis of the city wells by the State Health Dept. on 4-16-70 for phenols showed no concentrations greater than .005 ppm. This was the limit of detectability for the chloroform extraction method used. Since the concentrations reported by Hickok in the soil borings are in the same ranges as that of the city wells, they cannot be substantiated at this time.

The company plans to place all pipelines carrying only petroleum products above land so as to minimize undetected leaks.

Conclusions

Process waters are discharged from company property in violation of WPC-23 in regard to phenols, are acutely toxic to humans or other animals or plant life.

Company is operating without a permit as provided by Minnesota Statutes 115 and 116. Clean-cooling water may be discharged from company property.

Industrial process wastes must be adequately treated to meet the effluent standards of water quality and purity.

We are unable to state that run-off water is leaching phenols from company property to the underground waters. However, it seems obvious that continued presence of soil contaminated with phenolic compounds is

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is not desirable and ~~xxyxxxxxx~~ maybe/~~x~~ be hazard to the continued use of the municipal wells as a source of water supply.

The company stores petroleum products on their property without proper safeguards in violation of WPC 4 because the escape of this material may result in the pollution of waters of the state.

Because petroleum products spilled in the soil on company property continues as a source of pollution from percolation of run-off waters through the soil, the contaminated areas should be removed.

Until sufficient removal of contaminated ground is completed, the flow of run-off waters across these areas must be controlled and from company property treated if necessary, before discharge to the culvert across Walker Street.

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